Speech and Language Development: Monitoring Process and Problems
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Speech and Language Development: Monitoring Process and Problems

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Objectives After completing this article, readers should be able to:

1. Describe the progression of normal speech-language development.
2. Recognize delayed and disordered speech-language development and indications for referral.
3. Understand possible biologic and environmental contributions to delayed language.
4. Implement appropriate management strategies.

Case Study
You are seeing a 2½-year-old boy for a routine health supervision visit. On a general developmental screening questionnaire, his mother reports that he is not yet talking. She has not been too concerned because the child's father was a late talker and they live in a bilingual household. Although the boy has had several episodes of otitis media, she feels strongly that there is no question of hearing loss because he seems to understand what is said to him. Other domains of development are reported as age-appropriate. His physical examination results are normal, and he appears to be a socially engaging toddler. However, you have concerns about his apparent low frustration tolerance and tendency to throw tantrums.

Introduction
It has been said that all typically developing children in all cultures master the basics of their language by 4 years of age. (1) However, 5% to 8% of children experience speech-language delays or disorders by the preschool years, which may be associated with later learning, socioemotional, or behavioral problems. The primary clinician often is the first professional to whom parents turn when a developmental problem is suspected, and in the course of routine health supervision visits, the clinician may encounter any of the following language-related questions or concerns:

- The parents of a 9 month old wonder what language and social skills should be present at this age, and they have heightened concern because an older sibling has autism.
- The parents of a 12 month old wonder if their child is hearing impaired because he rarely responds to his name.
- The parents of an 18 month old who has a history of recurrent ear infections ask if those infections will affect their child’s language development.
- A 20 month old is reported to have lost the words he was using previously.
- The mother of a 2 year old reports that her child is not talking as much as her older siblings did at the same age.
- The parents of a 3 year old report that their child’s speech is very hard to understand and they wonder if this is normal.
- The father of a 3½ year old expresses concern that his child has started stuttering.
- The parents of a 5½ year old report that their son failed his kindergarten screening because he did not recognize letters of the alphabet; they wonder if kindergarten entry should be delayed a year.

This article provides a brief review of normal speech and language development from the discrimination and production of speech sounds to the comprehension and use of language for functional communication to the eventual development of reading and written language. The clinical presentation, epidemiology, and prognosis of specific speech...
speech and language

Milestones in the Development of Normal Speech and Language

Speech Discrimination and Receptive Language

Language development involves a complex interaction between biology and environmental experience. Typical infants come into the world with many of the foundational skills necessary for learning language, including the capacity to hear speech sounds, recognize speech contrasts, and prefer some sounds (human) over others (inanimate). Speech discrimination and the production of early speech sounds form the basis of oral language and communication. Although children are born with the capacity to detect speech sound differences, their speech perception abilities become more specialized and efficient over the first postnatal year. Their ability to discriminate sounds within their native language becomes more refined, and they become less capable of discriminating nonnative speech sounds that are not relevant to the learning of their primary language. For example, infants raised in an English-speaking environment continue to discriminate the difference between the /r/ and /l/ sounds, but the ability to hear this distinction wanes in children who are learning Japanese. English contains 45 distinct speech sounds (phonemes); experience in hearing the language shapes and sensitizes the child’s speech discrimination skills to those specific sounds.

By 8 months of age, infants begin to recognize the boundaries around words embedded within utterance streams; that is, they begin to extract and segment words from speech, a necessary prerequisite to single-word recognition, comprehension, and production. This capacity corresponds to the onset, between 8 to 10 months of age, of single-word comprehension. One of the earliest words the child recognizes is his or her name, a skill that develops as early as 6 months. Shortly thereafter, the infant responds appropriately to names for primary caregivers. Contextually specific words that are part of familiar routines are present by 9 months (eg, no, no; wave bye-bye; play pat-a-cake). From there, single-word receptive vocabulary builds exponentially.

Parents (and pediatricians) often are surprised to learn of the size of the single-word receptive vocabulary expected of the average 15-month-old child (150 to 200 words). By 18 months, most parents report that their child understands more words than they can count. Typically, children understand far more than they are able to express in the early years of language acquisition.

Expressive Language

Early Speech Production, Communicative Gestures, and the Emergence of Expressive Language

Early language development proceeds through predictable stages from the early production of vowel sounds in the first few postnatal months (cooing) to the emergence of consonant-vowel sounds by 6 months (babbling), the production of long consonant-vowel strings between 6 and 10 months (a skill known as canonical babbling), the emergence of first words between 9 and 15 months, and finally the combining of words in meaningful and intentionally communicative ways between 18 and 24 months. Just as infants are born with the capacity to hear and discriminate speech sounds, they come into the world prepared to vocalize and eventually to form words and sentences.

Oral expression is preceded by intentional, nonverbal communicative gestures such as pointing, showing, and giving, which emerge at approximately 9 months and have been shown to be predictive of receptive and expressive language at age 2 years. Canonical babbling sets the stage for the formation of words and is a precursor to the development of meaningful speech. Delays in the onset of canonical babbling have been associated with both hearing impairment and delayed language development. (2) Clinicians should probe specifically for the onset of canonical babbling when infants are between 6 and 12 months of age.

Jargon emerges as infants begin to combine a variety of consonant-vowel sounds with speechlike inflection. As jargon matures, intelligible words are inserted within complex vocal strings. By the time a “critical mass” of approximately 50 words has been achieved at around 18 months, most children experience a vocabulary burst. Between 18 and 24 months, they begin to construct two-word utterances, and the content of their language expands to include not only nouns but verbs and adjectives.

By age 3 years, children should be producing three-word utterances, their speech should be 75% intelligible, and vocabulary size should approach 1,000 words. At this stage, children are still mastering production of specific speech sounds, some of which are not well-articulated until 6 to 8 years of age (eg, /l/, /r/, /s/, /z/, /th/). However, speech should be fully intelligible by age 4 years, when children typically are speaking in
sentences, relating experiences, and participating in reciprocal conversations.

The age of acquisition of many receptive and expressive language milestones varies (Table 1). For example, in one study, the average word production of 2-year-old children was 312 words, but the range was 7 to 668 words. (3) One factor that has been shown to account for this variability is the amount of language to which children are exposed in the early years of language learning. In an often-cited study of the early language experience of children from different socioeconomic backgrounds, children in economically disadvantaged homes were found to have far less exposure to language and less varied verbal interactions with others in the home than children from advantaged homes. (4) On average, children in advantaged homes were exposed to 215,000 words over the course of 1 week versus 62,000 words in the disadvantaged group.

The content of the language directed to the children also differed significantly between the two groups, such that children in economically advantaged homes heard many more approving than disapproving statements over the course of an hour, while the pattern was reversed for children in disadvantaged homes. The more parents talked to their children, the more rapid was the child’s vocabulary growth. By age 3 years, children from advantaged homes had a vocabulary of 1,100 words compared with an average of 525 words for children from disadvantaged families.

**Early Literacy Skills and the Emergence of Reading and Written Language**

The process of reading symbols and connecting those symbols to sounds, sounds to words, and words to meaning is the product of thousands of years of human evolution and brain development. By kindergarten age, typically developing children have acquired the “alphabetic principle”: the understanding that written symbols (letters) correspond to speech sounds. The process requires an ability to attend to the sounds of language, segment sounds within words, and connect individual sounds with their corresponding visual symbols.

Just as the richness of the child’s language environment is associated with vocabulary development, the amount of time spent reading aloud to children has been linked to later reading proficiency. Reach Out and Read (ROR), a pediatrics-based intervention in which children are given an age-appropriate book at each health supervision visit and parents receive anticipatory guidance about the importance of reading to young children, has proved to be one of the most effective strategies to support early literacy and language development (www.reachoutandread.org). A series of studies has demonstrated that families participating in ROR report that they are more likely to read to their children and describe reading aloud as a preferred parenting activity. Exposure to ROR has been associated with higher receptive and expressive language scores in toddlers. (5) More research is needed to assess long-term efficacy in promoting language skills and literacy in later school years.

**Delayed Versus Disordered Language Development**

Determining whether a developmental difference is significant and warrants further evaluation and intervention is one of the clinician’s greatest challenges. There is no generally agreed-upon standard for what constitutes a developmental language delay, and clinicians should consider data from multiple sources (history, screening tools, and clinical judgment) in determining which children are delayed or at risk. Parental concern should be acknowledged and is, in itself, sufficient reason for closer examination of the child’s status. Parental worry about language status in the toddler and preschool-age child has been associated with delayed expressive language development.

The term “language disorder” refers to a deficit in the comprehension or production of language that causes clinically significant impairment in functioning relative to developmental norms and cultural expectations. A child who has a developmental language delay may or may not develop a speech-language disorder, depending on the severity of the delay and whether it causes significant impairment in functioning. The clinician may identify a child at risk or one who is presenting with delayed language development, but the speech-language clinician usually determines whether a delay is clinically significant or constitutes a disorder.

Prevalence studies suggest that 13% to 18% of 1½- to 3-year-old children present with late talking or expressive language delays. (6) At 4 years, approximately 50% of late talkers still present with language difficulties. Current screening measures do not predict reliably persistent language delay versus maturational lag followed by recovery. Factors that have been associated with early delays in expressive language include family history of language delay, low socioeconomic status, and the richness of the language environment. (6) Of those who continue to manifest speech-language delays, many require specific intervention. Early intervention programs often set a percent delay standard to determine eligibility, which typically is 20% to 30% below...
<table>
<thead>
<tr>
<th>Age</th>
<th>Receptive</th>
<th>Expressive</th>
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<tbody>
<tr>
<td>Birth to 3 Months</td>
<td>• Attends to voices/sounds (may quiet, vary suck pattern)</td>
<td>• Has differential cries</td>
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<td></td>
<td>• Shows preference for parental voice</td>
<td>• Vocalizes (coos, gurgles)</td>
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<td></td>
<td>• May orient to voice by turning eyes or head</td>
<td>• Reciprocally vocalizes</td>
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<td>• Startles/blinks/cries to loud sounds</td>
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<tr>
<td>3 to 6 Months</td>
<td>• Works to localize voices/sounds</td>
<td>• Exhibits vocal play with emotional content</td>
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<td></td>
<td>• Responds to change in tone/emotion</td>
<td>• Babbles, single syllables (/p/, /b/, /d/, /m/)</td>
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<tr>
<td></td>
<td>• Enjoys rattles/toys that make noise</td>
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<td></td>
<td>• Responds to own name (6 months)</td>
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<tr>
<td>6 to 9 Months</td>
<td>• Looks to family member when named</td>
<td>• Uses “mama,” “dada” specifically</td>
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<td></td>
<td>• Begins to understand words and picture names</td>
<td>• Points with index finger</td>
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<tr>
<td></td>
<td>• Understands basic concepts such as “no,” “all gone,” “bye–bye”</td>
<td>• Gestures to communicate (reaches to be picked up, waves bye)</td>
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<tr>
<td></td>
<td>• Exhibits vocal play with emotional content</td>
<td>• Imitates speech sounds</td>
</tr>
<tr>
<td></td>
<td>• Babbles, strings of syllables with intonation (canonical babbling)</td>
<td>• Uses 1 or 2 true words</td>
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<tr>
<td>9 to 12 Months</td>
<td>• Understands verbal cues for practiced routines (eg, “peek-a-boo”)</td>
<td>• Jargoning with tone and rhythm of speech</td>
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<td></td>
<td>• Recognizes words for common items</td>
<td>• Shaking or nodding head appropriately</td>
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<tr>
<td></td>
<td>• Responds to simple requests (“come here,” “give me”)</td>
<td>• Use of 3 to 6 words</td>
</tr>
<tr>
<td></td>
<td>• Looks when name is called</td>
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<tr>
<td></td>
<td>• Receptive vocabulary by 12 months: ~70 words</td>
<td></td>
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<tr>
<td>12 to 15 Months</td>
<td>• Follows one-step direction</td>
<td>• Repeats words</td>
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<td></td>
<td>• Shakes or nods head appropriately</td>
<td>• Says “no”</td>
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<tr>
<td></td>
<td>• Points to body part when named (15 months)</td>
<td>• Uses 2 to 50 words mixed with jargon</td>
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<td></td>
<td>• Rapidly increases receptive vocabulary</td>
<td>• Uses words for wants/needs</td>
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<td>• Points to objects/pictures (18 months)</td>
<td>• Learns new words weekly</td>
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<tr>
<td>15 to 18 Months</td>
<td>• Understands simple pronouns (“you,” “me”)</td>
<td>• Has an average vocabulary of 200+ words by 2 years</td>
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<td>• Points to objects/pictures (18 months)</td>
<td>• Speech ~50% intelligible by 2 years</td>
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<td></td>
<td>• Recognizes common objects by name</td>
<td>• Has decreased jargon and repeating</td>
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<tr>
<td>18 to 24 Months</td>
<td>• Follows two-step directions</td>
<td>• Commonly uses 2- to 3-word sentences</td>
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<td></td>
<td>• Enjoys simple stories, being read to</td>
<td>• Increasingly uses pronouns; some adjectives, adverbs, prepositions</td>
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<td></td>
<td>• Jargoning with tone and rhythm of speech</td>
<td>• Asks simple questions</td>
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<tr>
<td>24 to 30 Months</td>
<td>• Understands pronouns (“you,” “me,” “my,” “mine”)</td>
<td>• Joints songs/nursery rhymes</td>
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<td></td>
<td>• Understands some prepositions (eg, in, on, under)</td>
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<tr>
<td>30 to 36 Months</td>
<td>• Identifies objects by use</td>
<td>• Answers questions</td>
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<tr>
<td></td>
<td>• Identifies objects by use</td>
<td>• Helps to tell simple story</td>
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<td></td>
<td>• Identifies several colors</td>
<td>• Average vocabulary: 900 to 1,000 words</td>
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<tr>
<td>36 to 48 Months</td>
<td>• Follows 2- to 3-step directions</td>
<td>• Uses 4- to 5-word sentences by 3 years</td>
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<tr>
<td></td>
<td>• Understands most common objects and pictures</td>
<td>• Speech ~75% intelligible by 3 years</td>
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<tr>
<td></td>
<td>• Able to point to different actions in pictures</td>
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<td>• Identifies several colors</td>
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<tr>
<td>48 to 60 Months</td>
<td>• Listens with interest to conversations, longer stories</td>
<td>• Uses 5- to 6-word sentences by 4 years</td>
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<tr>
<td></td>
<td>• Points to object by category</td>
<td>• Can state name, age, sex</td>
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<tr>
<td></td>
<td>• Understands concepts of relative amount/size</td>
<td>• Talks about experiences</td>
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<tr>
<td></td>
<td>• Understands past tense</td>
<td>• Has fully intelligible speech by 4 years</td>
</tr>
<tr>
<td></td>
<td>• Uses complex sentence structure and includes much detail</td>
<td></td>
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<tr>
<td></td>
<td>• Uses irregular past tense, future tense</td>
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<tr>
<td></td>
<td>• Tells longer stories, staying on topic</td>
<td></td>
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<tr>
<td></td>
<td>• Can rhyme words and use some letters and numbers</td>
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Specific Language Impairment

Specific language impairment (SLI) refers to a disorder of oral language acquisition in the absence of environmental deprivation, deficits in nonverbal cognitive ability, hearing loss, autism, or other identified neurologic conditions. Recent research suggests, however, that children in whom SLI is diagnosed often have other, more subtle, deficits in nonlanguage areas of functioning relative to normal controls. (8) Children who have SLI have difficulty understanding and using syntax and grammar, such as tense markings, plurals, and possessives. Problems comprehending and formulating responses to open-ended questions (eg, why, what, and how) compromise their ability to participate in sustained conversation. Many children who have SLI eventually have trouble comprehending what they read.

Although its cause is unknown, SLI is presumed to be a biologically based neurodevelopmental disorder. Early signs of SLI include late onset of first words and phrases, immature or delayed mastery of the rules of grammar, and short utterance length relative to peers. Symptoms of SLI usually present in the preschool years, and by kindergarten age, an estimated 7% of children have SLI. Interestingly, in a prevalence study, only 29% of the parents of kindergartners in whom SLI was diagnosed had ever been told that their child had a significant speech-language problem. (9) The clinician’s role in early detection and timely referral is underscored by the significant morbidity associated with persistent speech-language disorders and the efficacy of appropriate treatment.

Phonologic Disorder

Phonologic disorder refers to impaired ability to articulate the speech sounds expected for age and developmental level to a degree that negatively affects communicative functioning. The speech production deficit may involve errors of omission (eg, failing to produce beginning or ending consonant sounds: banana = “nana”), errors of commission (substituting one sound for another: thumb = “fum”), or errors in the sequencing of sounds (spaghetti = “pasghetti”). As described earlier, mastery of all speech sounds in English does not occur until about 8 years of age, but speech should be fully intelligible by 4 years. Moderate-to-severe phonologic problems occur in approximately 2% to 3% of young school-age children. (10)

Childhood Apraxia of Speech

Childhood apraxia of speech (CAS) refers to a severe and persistent speech intelligibility disorder marked by an impaired ability to imitate and spontaneously produce speech sounds in isolation or sequentially. The problem is believed to stem from central nervous system-based mechanisms that control the planning, sequencing, and coordination of oral-motor movements for speech. The cause is unknown, but genetic transmission is suspected. Prevalence estimates range from 0.1% to 1%. (11) The typically affected child is a quiet baby who has delayed babbling and limited jargoning. Unlike the child who has phonologic disorder, whose articulation errors often are predictable and consistent, CAS is characterized by irregular and inconsistent speech production patterns. The diagnosis is difficult and should be made by a qualified speech-language pathologist after review of the child’s history; careful examination of oral-motor functions; and thorough assessment of receptive, expressive, and speech production skills. Intensive individual treatment usually is required, and most children improve, although many continue to have some difficulty with higher-level language function.

Stuttering and Developmental Dysfluency

A period of developmental dysfluency is not uncommon among 2 and 3 year olds in which they repeat a phrase (“I want, I want, I want some juice”), a word (“I, I, I want some juice”), or even a part of a word (“Wa, wa, want some juice”). This tendency is associated with the rapid increase in speech production around this age and usually resolves by age 4 years. Clinicians should reassure parents of toddlers and preschoolers that this is a normal developmental pattern that typically resolves without treatment. Parents should be cautioned against inter-
rupting, filling in, or offering prompts to the child (eg, “Slow down,” “Take your time”) or placing children in situations in which they are pressured to speak.

In contrast, stuttering refers to a clinically significant impairment in speech fluency and timing that involves speech sound repetitions, prolongations, and pauses, sometimes accompanied by interruptions in air flow and face or body clenching. The individual may actively avoid certain words and substitute others that are less problematic. Stuttering occurs in approximately 1% of school-age children and is three times more common in boys than girls, with a strong family influence. (7) Onset is usually around 4 to 5 years and almost always before age 10 years. Treatment is effective and involves targeting not only the speech production problem itself but the associated attitudinal and emotional issues that accompany the disorder. Like CAS, remediation of stuttering requires direct speech therapy.

**Dysarthria**

Dysarthria is a disorder involving motor control of muscles required for speech production. Seen in disorders such as cerebral palsy, muscle disorders, and acquired brain injury, this disorder is characterized by abnormalities of tone, strength, or coordination of facial, oral-motor, and respiratory muscles, resulting in speech that is labored and disordered. Speech therapy is indicated, and if the disorder is severe, augmentative communication may be appropriate.

**Dyslexia**

Dyslexia refers to a significant deficit in the ability to recognize words in print and to spell at the age-expected level in spite of adequate cognitive ability, motivation, and appropriate reading instruction. The core deficit most often is impairment in phonologic processing, including difficulty recognizing sounds within words, failure to master sound-symbol relationships, inability to remember and repeat sound sequences, and slow naming of letters and objects. Poor phonemic awareness (the ability to recognize the discrete sounds or phonemes within words) and slow naming of letters are two of the best predictors of later reading problems.

Approximately 8% of second graders have a reading disability. (12) Genes are implicated, and children who have a family history of reading disorder are significantly more likely to have reading problems relative to the general population. Early recognition of reading problems is essential because failure to acquire literacy skills in the primary grades is associated with persistent reading problems and school dropout.

**Special Conditions**

**Hearing Impairment**

Auditory input is critical for organizing the neural pathways associated with speech. This development requires both an intact mechanism for sound perception (intact auditory sensory system) and a language-rich environment. Vocalizations in the first 6 postnatal months are similar in infants who have intact or impaired hearing. Canonical babbling should emerge between 6 and 10 months, and if it does not, hearing impairment must be a primary diagnostic consideration. Infants who have mild-to-profound sensorineural hearing deficits identified early in life and receive appropriate treatment have significantly better language than those identified later in life. (13)

Currently, all states have programs for universal newborn hearing screening, with the goal being to complete diagnostic audiologic testing and appropriate medical evaluation by 3 months of age and to assure access to early intervention services not later than 6 months of age. Amplification, if indicated, should occur within 1 month of diagnosis and consideration for cochlear implantation, if appropriate, by 12 to 24 months, depending on the degree of hearing loss.

Otitis media with effusion (OME) is common in young children, with most children experiencing this disorder before school years. OME usually results in minimal-to-mild conductive hearing loss, and studies indicate that this level of mild and probably fluctuating deficit does not significantly impair long-term language development for children who are otherwise healthy and not at risk for developmental problems. (14) Hearing assessment as well as speech-language evaluation should be undertaken if the child has OME in the setting of risk factors for communication or academic problems. In addition, because a small proportion of children may have a hearing loss in the moderate range, hearing testing should be performed if effusions persist for 3 months or longer or at any time if delays or hearing impairment is suspected.

**Bilingual Language Development**

A child biologically prepared for normal acquisition of one language is capable of learning a second. Exposure to two languages can occur simultaneously or sequentially, and the learning processes associated with these are somewhat different. With simultaneous exposure to two languages, a child follows the same developmental schedule as a monolingual learner but incorporates elements from both languages. First words may emerge slightly later but still occur within the normal range. Some
mixing of words or grammatical rules may occur until the languages are differentiated, often not until ages 3 or 4 years. With sequential learning, mastery of the primary language is important because it provides the foundation for learning the second language. The amount of exposure and the child’s motivation and temperament affect how rapidly the second language is learned.

There is consensus among many researchers in the field that bilingualism in the context of normal language learning potential does not cause language delay. Evaluation of the bilingual child who has delayed speech-language milestones should use the same criteria as for monolingual children. When a child has weak primary language skills or recognized delay, the family should be encouraged to use the child’s dominant language at home.

### Autism and Genetic Syndromes

The language skills of children who have autism spectrum disorders vary widely from those who are nonverbal and require augmentative and alternative communication to those who are very verbal but have difficulty using language for social communication. Most children who have autism spectrum disorder have some level of speech-language delay, and approximately 25% to 30% have a history of language regression, which occurs usually between 15 and 24 months of age. (15) Developmental regression at any age is an automatic indication for referral.

The cognitive phenotypes in many genetic syndromes (eg, William, Turner, velocardiofacial) include impairments in the social or pragmatic use of language, even in the face of normal acquisition of early language milestones. Klinefelter syndrome is associated with deficits in language processing and language-based academic skills. Individuals who have primary intellectual disabilities (eg, Down syndrome) present with speech-language delays commensurate with their cognitive functioning.

### Identification and Management of Delayed or Disordered Language

#### Surveillance and Screening

The primary care clinician may be the only professional who has regular contact with children before school entry and, therefore, has responsibility for collaborating with parents to enhance their child’s development and to identify the early indications of problems. The American Academy of Pediatrics recommends that surveillance, the ongoing process of assessing the child’s development and behavior, be performed at all health supervision visits. In addition, a formal screening instrument should be administered at the 9-, 18-, and 30-month visits or at 24 months if patients will not be seen at 30 months.

Many general screening tools have been identified that vary in age applicability, administration time, and psychometric properties. (16)

Because language development provides the best early correlate to cognitive development and because communication delays can result in significant comorbid dysfunction, a child’s speech and language functioning should be a major consideration in surveillance and screening. A mnemonic to aid the pediatric clinician in monitoring speech and language development is offered in Table 2. The anticipatory guidance that clinicians provide at health supervision visits should include information regarding normal language development and expected milestones so that parents can be informed historians who participate in the developmental surveillance process.

The United States Preventive Services Task Force recently reviewed data and found insufficient evidence at this time to recommend either for or against the routine use of specific speech and language screening tools for preschool-age children in the primary care setting. (17) Evidence was insufficient, in part, because a “gold standard” for screening is difficult to define in light of inconsistent measures and terminology. Some frequently occurring risk factors were noted and included positive family history, perinatal indices (eg, prematurity, low birthweight), and male sex, but findings were inconsistent. Children who have obvious risk factors, such as hearing impairment, craniofacial abnormalities, and syndromes associated with known language impairment, warrant direct referral for evaluation and intervention.

#### Referral and Treatment

When a speech-language problem is suspected, the clinician should make simultaneous referrals for audiologic and speech-language evaluations. If the child is younger than age 3 years, a referral should be made to the local early intervention program; if 3 years or older, referral should be to the public school early childhood program. If a speech-language problem occurs in the context of global developmental delay or there are concerns about the quality of the child’s social interaction suggesting an autism spectrum disorder, further diagnostic evaluation is indicated.

The clinician should educate parents about the importance of a language-rich environment, which includes child-directed conversation, early reading, vocabulary building, and responding contingently to the child’s emerging use of language for communication. Parents should be guided in understanding the importance of
their active role in collaborating with clinicians and supporting their child’s development at home.

Case Study Discussion
This 2½-year-old boy clearly has delayed expressive language development that requires further evaluation. It is important to explain to his mother that his failure to talk cannot be assumed to be due to the history of familial late talking, otitis media, or bilingual exposure. Although his mother is confident that her son’s hearing is normal, his delayed language suggests the need for formal audiologic evaluation. A speech-language evaluation should be conducted either through his local early intervention program or by an independent speech-language pathologist. The early intervention program will also conduct a full developmental evaluation to rule out other problems and to design an individualized family service plan. The clinician can help the family understand the problem, make appropriate referrals, advocate for services, and guide the caregivers in supporting language development in the home environment.

Summary

- There is consensus regarding the developmental sequencing of receptive, expressive, and phonologic skills in early childhood and the role of exposure to speech sounds in language development. Strong research evidence implicates genetic and environmental factors in the causes of speech-language disorders. (18)
- Strong evidence suggests that speech-language disorders are prevalent and are associated with increased risk for learning and behavioral problems. (18)
- Based on strong evidence regarding the impact of the environment on language development, clinicians should guide parents in providing a language-rich environment, which includes talking to, reading to, and encouraging reciprocal communication with their children from infancy onward. (4)
- Scientific evidence is mixed concerning the efficacy of early intervention and treatment of speech-language disorders, and more controlled studies are needed.
- There is consensus that the pediatric clinician is in a unique position to identify delays early through a continuous process of surveillance and screening. A “gold standard” for screening is difficult to find because of inconsistent measures and terminology. At this time, evidence is insufficient that a specific speech and language screening instrument is more effective than clinical observation and parental concerns to identify children who require further evaluation.
References

Suggested Reading
## PIR Quiz

Quiz also is available online at [http://www.pedsinreview.aappublications.org](http://www.pedsinreview.aappublications.org).

5. Which of the following statements regarding normal speech development in children is true?
   - A. Canonical babbling is the first stage of language development.
   - B. Children can usually understand speech before they can express words.
   - C. Infants are not born with the ability to detect speech differences, but they develop it later.
   - D. Most children who have normal speech say their first word at 18 months of age.
   - E. Socioeconomic status has no effect on language development.

6. At a health supervision visit, the mother of a 9-month-old girl asks you if her daughter’s language development is normal. Which of the following language milestones is most appropriate for this girl’s age?
   - A. Localizing of voices and sounds.
   - B. Reciprocal vocalizing.
   - C. Saying three words, including “mama” and “dada.”
   - D. Startling to loud sounds.
   - E. Understanding “bye-bye” and “no.”

7. You are evaluating a 2-year-old boy at a health supervision visit. His mother says that he does not talk as much as her other two children did at his age, and she asks you for a referral for a speech evaluation. Which of the following is the most appropriate indication for this referral?
   - A. Failure to point to pictures when requested.
   - B. Failure to recognize four colors.
   - C. Failure to use pronouns appropriately.
   - D. Failure to use two-word sentences.
   - E. Speech that is not fully articulate.

8. You are evaluating a 6-year-old girl at a health supervision visit. Her mother is concerned about her speech because she usually only says portions of words and consistently substitutes consonant sounds for others. Her teachers have complained that they often cannot understand what she says. A look at your records reveals that she babbled and jargoned appropriately in infancy. Which of the following is the most likely diagnosis?
   - A. Childhood apraxia of speech.
   - B. Developmental dysfluency.
   - C. Dyslexia.
   - D. Phonologic disorder.
   - E. Specific language impairment.

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### HealthyChildren.org Parent Resources from AAP

The reader is likely to find material to share with parents that is relevant to this article by visiting this link: [http://www.healthychildren.org/English/ages-stages/baby/pages/Language-Development-4-to-7-Months.aspx](http://www.healthychildren.org/English/ages-stages/baby/pages/Language-Development-4-to-7-Months.aspx).

Also, the reader can find additional articles on speech development and problems by typing “speech problems” in the search function box on the Healthy Children website.
Speech and Language Development: Monitoring Process and Problems
Susan McQuiston and Nancy Kloczko
*Pediatrics in Review* 2011;32;230
DOI: 10.1542/pir.32-6-230

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